Standard Operating Procedure
Fish Processing

Office of Environmental Measurement and Evaluation
Ecology Monitoring Team
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Note: The effective date is considered to be the last approval date.

Revision Page

Date	Rev#	Summary of Changes	Sections
	1	**Initial Approval**	

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1.0 Scope and Application

This procedure is applicable to sampling efforts investigating residues in fish tissue.

2.0 Summary of Method

There are three basic components to this procedure. The first is documentation of sample arrival in the biology laboratory. The second component, identified as Phase II, involves a process of individual fish inspection, weight, length, age, and sex determination, as well as filleting and cutting fish tissue into pieces for further processing. The third component, Phase III, involves homogenization of whole body, composite, and individual fish samples. Using a Hobart buffalo chopper, fish tissue homogenates are generated. Sample homogenates are combined as necessary, distributed into the appropriately labeled sample jars, and transferred to the appropriate laboratory through standard chain of custody protocols.

3.0 Definitions

3.1 Otolith: A small bony concretion located in the inner ear chamber.

3.2 Offal: Whole fish minus fillet.

4.0 Health and Safety Warnings

4.1 When working with potentially hazardous materials or situations, follow EPA, OSHA, and specific health or safety procedures.

4.2 All proper personal protective clothing and equipment is to be worn. This may include eye protection, lab coats, cut-proof gloves and nitrile gloves.

4.3 Proper ventilation is required when working with hydrochloric acid or ethanol.

4.4 Some samples may contain biological and chemical hazards. These samples shall be handled with appropriate personal protective equipment.

5.0 Interferences

5.1 Interference may result from sample cross-contamination, using contaminated equipment, solvents, reagents or sample containers.

5.2 Sample cross-contamination problems during processing can be eliminated or minimized through the use of dedicated sampling equipment and/or proper cleaning of the equipment each time it is used to process a new sample.

6.0 Personnel Qualifications

6.1 All personnel working at Superfund sites are required to take a 40-hour health and safety training course, and if necessary, a refresher course prior to engaging in any field activities.

6.2 All personnel should be trained by an experienced individual before initiating the procedure.

6.3 All personnel shall be responsible for complying with all quality assurance/quality control requirements that pertain to their organizational/technical function.

7.0 Equipment and Supplies

7.1 Reagents

-De-ionized (DI) water
-Ethanol
-CST 400 Detergent
-Tap water

7.2 Other

-Hobart buffalo chopper
-Brushes (2)
-Ethanol waste container
-Aluminum foil (2ft width; regular size)
-Plastic wrap or tubes (food grade)
-Top loader (Mettler Toledo)
-Bench sheets (Fish Sampling and Fish Sampling Aliquot Prep)
-Measuring board
-Scale envelopes
-Sealable plastic bags (large size)
-Sealer
-Tweezers
-Needles
-Vacu-tubes
-Nitrile or latex gloves

-Glass or Teflon cutting boards
-Stainless steel knives
-Glass or plastic sample containers
-Stainless steel bowls
-Scoops or spoons
-Sharps container
-Cut-proof gloves
-Poultry shears
-Knife sharpener
-Pliers
-Chain of Custody forms and tape
-Process forms (hard copy or electronic versions)
-1.8mL autosampler vials with covers

8.0 Procedures

8.1 Sample Log-in To Biology Laboratory

8.1.1 Upon arrival to the laboratory, samples will be entered into the biology sample receipt log book and will be tracked throughout processing.

8.1.2 Samples are checked upon arrival for proper storage conditions, chain of custody and labeling comparability and, if required, to insure that chain of custody seals are intact. A copy of the chain of custody form is stapled into the sample receipt book. A second copy is kept with the project file.

8.2 Phase I

8.2.1 Individual Fish Inspection:
Individual fish samples will be inspected for any possible damage incurred during transport that may compromise the sample integrity. Individual samples will be inspected for gross morphological abnormalities, specifically fin erosion, skin ulcers, skeletal anomalies, neoplasms, and parasites. Questionable diagnoses will require consultation with the project lead and may result in referencing texts on the subject or contacting a pathological laboratory for possible biopsy work. Observations are documented in the Fish Sampling bench sheet (hard copy or electronic version).

8.2.2 Sample Weigh-In:
Each individual fish will be weighed immediately after inspection to determine total wet weight. Balances used will be checked for calibration prior to use or daily, whichever is less frequent. If the fish are to be taken for chemical analyses, pre-cleaned aluminum foil is to be placed on the top

loading balance, the balance zeroed, then the weight read and recorded to the nearest 1/10 of a gram on the bench sheet. New foil shall be placed on the scale and tared (to offset the weight of the foil) prior the weighing of each sample. Weighing of fillets and offal will follow the same procedure. All weights will be documented on the Fish Sampling bench sheet (hard copy or electronic version).

8.2.3 Length Measurement:

The total length of each individual fish will be measured on a pre-cleaned measuring board. The length will be taken by butting the snout of the fish up to the end-plate of the board, and with fingers, gently compressing the caudal fin from the dorsal and ventral direction. The measurement is taken from the measuring board at the point of maximum elongation. The measurement is recorded in centimeters to the nearest 1/10 of a centimeter. All lengths will be documented on the Fish Sampling bench sheet (hard copy or electronic version). If the fish are to be taken for chemical analyses, the measuring board is to be decontaminated in between each sample (defined as individual or composite, depending on the project specific QAPP).

8.2.4 Age Determination:

In order to provide the best insight on the duration of exposure of individual fish to target analytes, fish samples will have scale samples collected, fin rays or spines clipped and/or otoliths removed and prepared for future age determination as time permits. Approximately twenty scales will be removed from just posterior of the pectoral fin and below the lateral line (location may vary depending on species). Removal is done by holding the knife blade at a 45^{o} angle off the fish pointing toward the posterior end of the fish. Depending on the size of the individual scale, remove the scales by moving the blade backwards against the "grain" of the scales. The scales can be picked off with the point of the knife (larger scales) or scraped with the front portion of the blade (smaller scales). Scales will be placed between a small piece of paper and then put into standard scale envelopes which have been pre-labeled with species and sample number, date and survey name.

8.2.4.1 Otoliths:

Otoliths are located in the cranial cavity of teleost or bony fish. There are three on either side of the head, but only one is usually readily visible due to it's relative size. They are associated with the inner ear and are found suspended in tiny fluid filled sacs anterior to the brain stem along either side of the dorsal, posterior end of the brain. The otolith itself may be described as "pearly" white in color, with a concave-convex form, almost serrated in appearance, usually rounded on one end and more pointed on the other, and range in size from a millimeter to a centimeter.

To remove the otolith, make a cut from the top of the head down through the front third of the gill cover. Run the cut approximately 2/3 down trough the fish. At this point, "hinge" the head down and away from the body. Locate the butterfly-shaped capsules or sac that contain the otoliths. If the otoliths are not exposed at this point, make another thin cut anterior to the first and look again. Using a pair of tweezers, probe on either side of the midline of the head until the small sac is located. Within this sac is the otolith which is removed by gently grasping it with the tweezers and "backing it out" of the sac. Once the otolith is removed, it is best to rinse immediately with warm tap water and ethanol, removing any bloody fluid, and wipe clean with a tissue or paper towel. The otolith(s) are placed in autosampler vials labeled with species and sample number, date and survey name. The vials are then plugged. If the otolith cannot be cleaned immediately, they should be cleaned as soon as possible using a dilute water and bleach solution followed by a thorough rinse with ethanol. In the case of eels, only otoliths will be collected. All sample containers will be labeled appropriately to match individual tissue sample identification/sample numbers. The FISH SAMPLING bench sheet (hard or electronic version) will be marked to indicate the taking of scales and/or otoliths for each individual fish.

8.2.4.2 Spines:
In the case of any Ictaluridae (catfish family) collected, the spines will be clipped along with otoliths for determining age. Using a pair of heavy-duty wire cutters, both of the pectoral spines are clipped at the base. The spines are rinsed with warm tap water and ethanol and wiped clean with a tissue or paper towel. They are then placed in a standard scale envelope which has been pre-labeled with species and sample number, date and survey name.

8.2.4.3 Fin rays:
Fin rays are clipped and saved as another means of ageing the fish.

8.2.5 Sex determination:
The sex of each individual will be determined just prior to filleting. Where fish are being processed for chemical analyses, an incision will be made from the anal vent up to a position just below the pectoral fins. The incision will be deep enough to penetrate into the gut cavity but shallow enough not to cut into any internal organs and cause cross contamination with the soon to be fillets. Sex organs will be identified by form, color, and texture. Male testes will be smooth and a creamy white in coloration, ovaries will be a granular texture and coloration generally golden brown. The sex will be documented on the Fish

Sampling bench sheet (hard copy or electronic version) for each individual fish.

8.2.6 Bile extraction:

The extraction of bile from the gall bladder for analysis of polyaromatic hydrocarbons (PAHs) requires a second person, is conducted using vacu-tubes and involves the following steps:

8.2.6.1 Utilizing pre-cleaned forceps, lay back the flap of skin and muscle tissue making up the abdominal cavity, exposing the internal organs of the fish.

8.2.6.2 Identify the liver which is located in the anterior end of the gut cavity. The gall bladder will be attached somewhere on the liver and is gray-greenish in color.

8.2.6.3 Using the stainless forceps, lift up on the gallbladder so that the tissue of the organ forms a "tent-like" shape.

8.2.6.4 With a twisting motion, attach the needle to the barrel. Insert the needle into the gallbladder at the base of the "tent" while still supporting with the forceps. Puncture the outer wall so that the needle penetrates into the gallbladder.

8.2.6.5 Place the vacu-tainer into the barrel and evacuate the bile from the gallbladder by compressing the vacu-tainer into the barrel with the thumb while holding the barrel with the first two fingers of the same hand. The needle will puncture the rubber stopper of the vacu-tainer and the bile will be sucked from the gallbladder into the vacu-tainer. The tent like shape will assist in ensuring that the tissue of the gallbladder does not get "sucked up" into the needle of the vacu-tainer and block the withdrawal of bile.

8.2.6.6 Detach the needle from barrel and the vacu-tainer and discard the needle in a "sharps" container. The barrel can be reused. Label the vacu-tainer tube accordingly, protecting the label from damage as necessary. Place the vacu-tainer tube in freezer at $\leq$-20°C until time of analysis.

8.2.6.7 The extraction of bile will be documented on the Fish Sampling bench sheet (hard copy or electronic version) for each individual fish.

8.2.7 Filleting fish:

Individual fish will be grouped by species and sample location either as individuals or sample composites. Filleting will take place in a manner that insures that a single species or composite sample will be filleted before any new species or composite samples are processed. Each sample, defined as either individual fish, fillet and/or offal or composite will be processed **separately** and all equipment/utensils decontaminated **between each sample.** Nitrile gloves will be worn throughout the fish processing procedure and changed out for a fresh pair after processing each individual sample. A cut-proof glove is also required to be worn on the hand opposite the cutting hand. Since mixed suites of analysis may take place for a sample, care must be taken in order to avoid any contamination of samples or cross-contamination between sample tissues. Utensils will include glass or teflon cutting boards, high quality stainless steel knives and stainless steel or aluminum holding trays. Benches are to be lined with aluminum foil and, if organic analytes are targeted, rinsed with ethanol and allowed to dry. This layer of aluminum foil will be used as a protective measure to ensure that a sample does not become contaminated if it accidentally slips off the cutting board and onto the bench top. Aluminum foil will be replaced prior to the next sample in the event a fish does slide off the filleting board and onto the foil.

Note: The cutting board and all utensils are to be decontaminated with detergent, thoroughly rinsed with tap water, and then triple rinsed with de-ionized water and, if organics are involved, ethanol prior to use and in between samples .

<u>Filleting Procedure:</u>

1. Place dry, decontaminated heavy-duty aluminum foil on the lab bench where filleting is to take place.

2. Place a decontaminated glass or teflon cutting board on top of the aluminum.

3. Place fish on top of cutting board and make an incision just posterior of the head on the dorsal side of the fish. Continue cutting into the fish until you reach the top of the rib cage. Working towards the tail, continue to cut along the vertical edge of the backbone and the top of the rib cage. Once you reach the end of the rib cage, push the point of the knife through the fish, using the backbone as a guide (take care not to push the knife through the ventral portion of the fish). Continue cutting along the vertebrate to the base of the tail. Leave the skin attached at the base of the tail. Go back to the forward portion of the fillet and trim the flesh off of the rib cage,

moving towards the ventral side of the fish until the ventral incision made for sexing the fish is reached. This should complete the separation of the fillet from the rest of the fish, with the exception of the attachment to the caudal fin. Lay the fillet out and over the tail, exposing the tissue with the skin underneath. Make a cut through the flesh where it meets the tail, being careful not to cut through the skin on the bottom side. Slide the fillet knife along between the skin and flesh until the fillet is separated from the main body of the fish and its skin. Repeat step 3 for the other side of the fish.

4. When filleting of the sample is complete, cut the fillets into approximate two inch thick slices. Using the point of the knife for transferring the sample in order to minimize handling, place the fillet tissue into a tared, prelabeled, glass or plastic sample container. A total fillet weight will be documented on the Fish Sampling bench sheet (hard copy or electronic version). If multiple jars are necessary, be sure to tare each jar and label clearly as "xx of xx".

5. If the offal (whole fish minus fillet) is to be analyzed, it should be placed in Like-labeled and tared container(s). If the offal is too big to be placed in jars, placement in tared, decontaminated aluminum foil is acceptable. The foil-wrapped offal is then double bagged in a self-sealing plastic bag with a label placed inside the outside bag. A total offal weight will be documented on the FISH SAMPLING bench sheet (hard copy or electronic version). All samples jars or bags should be labeled as to identify the survey name, sample location, species and sample number so that they match the information recorded on the bench sheet and chain of custody form.

6. If Phase 2 processing is to be **performed within 24-hours,** the **samples are placed in a refrigerator at 4°C** and if required, the refrigerator door is then custody-sealed. **If further processing will be delayed, the samples are simply wrapped in aluminum foil, put into plastic tubing sealed with tie wraps, put into a self-sealing plastic bag with a label inside and stored in a designated freezer at -20°C** and if required, the freezer door is then custody sealed. The storage location (refrigerator or freezer #) is documented on the bench sheet under the Comment column.

8.3 Phase II

8.3.1 Sample Homogenization and Sub-sampling Procedure

8.3.1.1 Pre-cleaning:

A. Thoroughly wash all surfaces that will be contacting the sample (i.e. chopper bowl and blade, knives, stainless steel bowls, scoops or spoons, cutting boards, etc). with soap and water and then thoroughly rinse them with tap water.
Note: Prior to sample processing (as well as in-between processing individual samples), rinse all equipment that is expected to come into contact with samples as prescribed above.

8.3.1.2 Processing of individual samples:

Table 1.0 Analytes and Approximate Weights

Analysis	Approximate Weight
Total Hg	**10 grams (2 oz wide mouth jar-clear)**
Total Metals	**10 grams (2 oz. wide mouth jar-clear)**
Total Solids	**10 grams (2 oz. wide mouth jar-clear)**
Pesticides/PCB/lipids	**Minimum of 40 grams (4 oz. wide mouth jar-amber**

***For designated QC samples, sample weight is tripled**

A. Fillets

1. If frozen, fillet samples will be taken from the freezer and separated from the plastic tubing. If refrigerated, the sample will be removed from the sample jar. The top loading balance, whose calibration has been checked prior to use or daily (whichever is less frequent), will have a decontaminated piece of aluminum foil placed on top of it. The balance is tared to offset the weight of the aluminum foil. The sample is weighed to a tenth of a gram. A total fillet weight will be documented on the Fish Sampling Aliquot bench sheet (hard copy or electronic

version). The weight is recorded on the bench sheet with the appropriate sample location, species and sample number.

2. Sample fillet will be placed into the bowl of the pre-cleaned food chopper. The chopper will be turned on and the sample chopped until a finely-chopped homogeneous mixture is obtained.
   Note: Use extreme caution when handling and operating the chopper.

3. When the fillet sample is completely chopped, turn off the chopper and unplug it. The sample is thoroughly mixed with a spatula or spoon in the chopper bowl. Aliquots from this bowl are then put into the appropriate tared, pre-labeled sample jars and refrozen, if necessary. Fillet aliquot weights will be documented on the Fish Sampling Aliquot bench sheet (hard copy or electronic version) for each analysis to be performed. Unless specified in a project-specific QAPP, see table 1, Analytes & Approximate Weights, for target weights. The weight is recorded on the bench sheet with the appropriate sample location, species and sample number.

B. Offals

1. Offal samples, if frozen, will be taken from the freezer and separated from the plastic tubing. If only refrigerated, the sample will removed from the sample jar. The top loading balance, whose calibration has been checked prior to use or daily, whichever is less frequent, will have a decontaminated piece of aluminum foil placed on top of it. The balance is tared to offset the weight of the aluminum foil. The sample is weighed to a tenth of a gram. A total offal weight will be documented on the Fish Sampling Aliquot bench sheet (hard copy or electronic version). The weight is recorded along with the appropriate sample location, species and sample number.

2. Sample offal will be cut up into "ice cube" sized pieces on a Pre-cleaned glass cutting board and pieces will be placed into The bowl of the pre-cleaned food chopper. **Take particular care to "break up" the head portion of large fish.** The chopper is then turned on and the sample chopped until a finely chopped homogeneous mixture is obtained.

3. If the sample is too big to be contained in the chopper bowl, the homogenized chopped sample is transferred and mixed in a pre-cleaned stainless steel bowl. If the chopped offal sample is not too big, it can be mixed in the chopper bowl. Offal aliquot weights will be documented on the Fish Sampling Aliquot bench sheet (hard copy or electronic version) for each analysis to be performed. Unless specified in the project-specific QAPP, see table 1, Analytes & Approximate Weights, for target weights. The weight is recorded on the bench sheet along with the appropriate sample location, species and sample number.

C. Whole Bodies

1. Whole fish, if frozen, will be removed from the freezer and separated from the plastic tubing. If only refrigerated, the sample will be removed from the sample container. The top loading balance, whose calibration has been checked prior to use or daily, whichever is less frequent, will have a decontaminated piece of aluminum foil placed on top of it. The balance is tared to offset the weight of the aluminum foil. The sample is weighed to a tenth of a gram. A total weight will be documented on the Fish Sampling Aliquot bench sheet (hard or electronic version) along with the appropriate sample location, species and sample number.

2. If not already done so, the sample is cut up into "ice cube-sized" square pieces on a pre-cleaned glass cutting board. **Take particular care to "break up" the head portion of large fish.** The pieces are then placed into the bowl of the pre-cleaned food chopper. The chopper is turned on and the sample chopped until a finely-chopped homogenous mixture is obtained.
Note: Use extreme caution when handling and operating the chopper.

3. If the sample is too large to be contained in the food chopper bowl, the homogenized, chopped sample is transferred and mixed in a pre-cleaned stainless steel bowl. Otherwise, the sample can be mixed in the food chopper bowl. Whole-body aliquot weights are to be documented on the Fish Sampling Aliquot bench sheet (hard-copy or electronic version) for each analysis performed (Unless noted otherwise in the project-specific QAPP, see table 1, Analytes and Approximate Weights, for target weights). The weight is recorded on the bench sheet in addition to the appropriate sample location, species and sample number.

and Approximate Weights, for target weights). The weight is recorded on the bench sheet in addition to the appropriate sample location, species and sample number.

D. Composite Samples

1. Gather all components making up the composite sample (i.e., whole fillets and/or offal) If the components making up the sample are frozen, remove them from the freezer and separate them from the plastic tubing. If the components have only been refrigerated, remove the sample components from the sample container(s).

2. Place a decontaminated piece of aluminum foil on the top-loading balance, whose calibration has been checked prior to use or daily (whichever is less frequent). Tare the balance to offset the weight of the aluminum foil. Obtain the weight of the sample (sample is weighed to a tenth of a gram). The total weight, in addition to the appropriate sample location, species, and sample number, is recorded on the Fish Sampling Aliquot bench sheet (hard copy or electronic version).

3. If not already done so, cut up the composite sample components into "ice cube" sized pieces on a pre-cleaned glass cutting board. **Take particular care to "break up" the head portion of large fish.** Place the pieces into the bowl of the pre-cleaned food chopper. Turn the food chopper on and proceed to chop the sample until a homogeneous mixture is obtained. Thoroughly mix the homogenized sample with a pre-cleaned spatula. If the sample is too large for all of it to fit into the food chopper bowl, the homogenized sample can be put into a separate pre-cleaned stainless steel bowl. Once the sample has been placed in the stainless steel bowl, thoroughly mix it with a pre-cleaned spatula.
Note: Use extreme caution when handling and operating the chopper.

4. Aliquot the sample from the bowl (from above step) into tared, labeled jars for each requested analysis. Composite aliquot weights are recorded in addition to the appropriate sample location, species and sample number, on the Fish Sampling Aliquot bench sheet (hard copy or electronic version). Unless specified in the project-specific QAPP, see table 1, Analytes and Approximate Weights, for target weights.
Note: Decontaminate equipment in-between the processing of individual samples being used for the composite

E. Composite Samples With a High Degree of Weight Variation- *Defined as the total length of the smallest fish less than 75% of the largest fish in the composite to be determined and noted during Phase I.*

Note: This methodology will only be utilized if the targeted Age and/or length being sought cannot be attained

1. Gather all of the components making up the composite sample. If frozen, remove the components from the freezer and separate them from the plastic tubing. If the samples are refrigerated, take them out of the refrigerator and remove them from their containers.

2. Place a piece of decontaminated aluminum foil on the top loading balance, whose calibration has been checked prior to use or daily, whichever is less frequent. Tare the balance to offset the weight of the aluminum foil. Weigh the sample components to the nearest tenth of a gram.

3. Add the individual component weights and record the weight on the Fish Sampling Aliquot bench sheet (hard copy or electronic version). Record the weight in addition to the appropriate sample location, species and sample number. Divide each individual component weight by the total weight to get its fraction of the total weight. Record calculations in a bound laboratory fish processing log along with the appropriate sample location, species and sample number.

4. From the approximate total weight needed for all analyses to be conducted (as referenced in the project-specific QAPP or Figure 1), calculate the representative weight from each individual fish necessary to complete the composite by multiplying the total weight needed by the representative fraction for each fish in the composite (determined in the previous step). Record calculations in the bound laboratory fish processing log, along with the appropriate sample location, species and sample number (to a tenth of a gram).

5. Take each component separately and cut up into "ice cube" sized pieces on a pre-cleaned glass cutting board. **Take particular care to "break up" the head portion of large fish.** Place the cut-up pieces in the bowl of the pre-cleaned food chopper. Turn on the

food chopper and proceed to chop the sample until a homogenous mixture is obtained. Remove the required sample weight from the homogenized sample in the food chopper bowl and place into a separate pre-cleaned stainless steel bowl.
Note: Use extreme caution when handling and operating the chopper.

6. Repeat step 5 for each component of the composite sample.
Note: Decontaminate equipment that comes into contact with samples in-between processing the individual samples making up the composite sample if the individual homogenates are being retained for possible individual analysis.

7. Once all of the chopped fish is in the separate pre-cleaned stainless steel bowl, mix the chopped fish with a pre-cleaned spatula. From this bowl, aliquot samples for each requested analysis. Document all composite aliquot weights on the Fish Sampling Aliquot bench sheet (hard copy or electronic version) along with the appropriate sample location, species and sample number.

8.4 Transfer of Samples for Chemical Analysis

8.4.1 In-House Analysis

8.4.1.1 Notify the project lead once samples have been processed.

8.4.1.2 Fill out chain of custody (COC) forms with the required information. Confirm all processed samples by cross-referencing the Fish Sampling and Fish Sampling Aliquot bench sheets (hard copy or electronic version) with the COC, insuring that all samples and associated aliquots are being transferred.

8.4.1.3 Unless instructed otherwise, only the COC is brought to the person logging in samples to the laboratory. This person will enter the requested analyses into the laboratory information management system (LIMS). The COC is signed by both the person logging in the samples as well as the person delivering the samples. The pink copy of the COC is stapled into the Biology Laboratory sample receipt login book and a copy is made and given to the project lead.

8.4.2 Outside Analysis

8.4.2.1 Repeat steps 8.4.1.1 and 8.4.1.2.

8.4.2.2 After it is confirmed that the receiving laboratory is expecting the shipment(s) of fish, the fish are packaged into coolers in a layered fashion, "sandwiching" a layer of samples between newspaper covered with ice (preferable dry ice).

8.4.2.3 Make a copy of the COC and place it with the sampling records. Place the COC(s) in a self-sealing plastic bag. Seal the bag and tape it to the inside of the cover of the cooler. Notify the project lead that the shipment is ready.

8.4.2.4 The project lead takes control over the samples and completes the shipping process.

9.0 Data and Records Management:

9.1 All data and information pertaining to sample collection is to be recorded appropriately.

9.2 Any known issues that may compromise the data shall be recorded on data sheets (including any electronic data sheets), lab notebooks, and chain of custody forms. notebooks,

9.3 If samples are sent out for analysis, the chain of custody form is relinquished to the receiving laboratory. A copy is kept with the sampling records.

9.4 The sampling data is stored at US EPA - NE, 11 Technology Dr, North Chelmsford, MA 01863, for at least 3 years.

10.0 Quality Control and Quality Assurance:

10.1 Information pertaining to data representativeness, somparability, completeness, validation and usability can be found in the project-specific quality assurance project plan (QAPP).

10.2 All field QC sample requirements in the SOP or QAPP must be followed. These may involve trip blanks, equipment blanks, field duplicates, and the collection of extra samples for laboratory quality control.

10.3 Data that is incomplete, of poor quality, and/or conflicting shall be dealt with in the manner specified in the project-specific QAPP.

11.0 Waste Management and Pollution Prevention:

11.1 Collect and store waste ethanol in properly-labeled waste containers and dispose of the containers in the appropriately-labeled drum located in the satellite waste storage areas. Alcohol waste is disposed of by carefully pouring it into the waste non-halogenated solvents container in the Extraction Laboratory.